

Reclining chair.

This invention consists of a reclining chair for use in office or household applications which combines a simple structure, great strength, easy use and is adjustable to match the individual user.

5 It is desirable for an armchair to provide the greatest comfort as well as for the degree of reclining through tilting to prove satisfactory, in any event over 30/35°, so that the user's body is placed in an appropriate position.

With this aim in view, it is desirable for the armchair to have a headrest and armrests, so that the individual's comfort is independent of the position taken by the  
10 armchair, and preferably an object-carrying tray for items such as a computer keyboard, a mouse or a laptop computer.

As well as the previous items, in order for the product to be competitive on the market, it has to have a moderate price, without losing any structural strength for this reason.

15 A well-known type of reclining armchair has a leg on which there is a part extending forwards, articulated at its front end, so that when said articulation is released the seat tilts on the articulation shaft. This type of structure involves two main drawbacks: first of all large moments are created in respect of the support leg, which means that the structure has to be given great strength, which has a negative effect on production costs  
20 and the weight of the armchair; secondly the tilting angle is considerably limited, through requiring said articulated item to be partially concealed under the seat, and to be supported on a leg, normally fitted with wheels. Another of the disadvantages is that the centre of gravity is not significantly modified, meaning that the forces exerted by the articulation means and the support leg are greater than what is advisable.

25 The object of the invention now being proposed is a reclining armchair which overcomes the aforementioned drawbacks, by displacing the centre of the seat base proportionally to its tilting to maintain the position of the chair's centre of gravity with the person sitting in it, allowing more economical manufacture, maintaining or improving its structural strength, and being more versatile as regards the possible degree of tilting, with  
30 no pre-set positions.

As further advantages it has an adjustable footrest, and means to support a tray for holding for example computer devices such as a keyboard, a mouse or a portable computer.

In order to illustrate the explanation to follow, we enclose with this descriptive report five sheets of drawings, which represent the essence of this invention in five figures, and in which:

Figure 1 shows the armchair of the invention seen from the bottom, in which the support has been removed to make the drawing clearer;

Figure 2 shows the armchair of the invention from a side view in which the base has been made with a cutaway to illustrate the interior mechanism;

Figure 3 shows the armchair of the invention in a slightly tilted position in which, in the cutaway made, the position of the mechanism can be seen;

Figure 4 shows a view similar to that of Figure 3 but in a totally tilted position; and

Figure 5 shows a front view of the armchair in which the tilting mechanism is appreciated;

In these figures 1 represents the armchair covered by this invention, fitted with a backrest 2 and a seat base 3. The preferential angle of the base plane of the backrest in respect of the base plane of the seat is 100°.

4 shows a support leg for the armchair over, for example, a base fitted with wheels. It is advisable for the support leg to have height adjustment means, such as an elastic and/or pneumatic system, as already known in the state of the art, or any other mechanical media, which in any event are outside the scope of this invention.

The support leg 4 of the armchair 1 is securely joined to a first body 5 mobile in respect of a second body 6 secured to the base of the armchair 1. Both the first body 5 and the second body 6 have at least two lateral surfaces 7 and 8 and 9 and 10, respectively, each fitted with at least one pair of slots 11 and 12 and 13 and 14 respectively. These slots are crossed by two shafts 15 and 16. At this point we should state that the shaft can be mechanically common to both sides of the mechanisms or be formed of two separate mechanical shafts constituting a single geometrical shaft, so we will refer to the mechanical shaft on both as a single shaft, even though it could be divided into two parts. At least one of these shafts 15 or 16 is fitted with a pinion 17 engaging on one side with a rack 18 joined to one of the slots 11 or 12 and on the other side to another rack 19 connected to slots 13 or 14.

The armchair body 1 can then be displaced from a non-tilted end position to a tilted position, involving the movement of the set of items 1, 2, 3, 6, 9, 10, 13, 14 and in

particular that of the rack 18 which will force the corresponding movement of the pinion 17, with which it takes on a precise position defined through the effects of the other rack 19 of the set of elements secured to the base 4, 5, 7, 8, 11, 12, 19.

5 Through the convergence of the slots 11, 12, 13, 14 the sliding movement produces in turn a rotation, since all the other degrees of freedom of the mechanism are restricted by this position. The sliding will be limited by the position of the shafts in the determined position of slots 11 and 13 or 12 and 14, which will never be parallel and the rotation will be limited by the existence of the pair of shafts 15 and 16 themselves, one in each pair of slots 11 and 13, or 12 and 14.

10 Though it may prove useful to give both pairs of slots 11 and 13 and 12 and 14 their own rack assembly 17, 18 and 19, for the sake of operating smoothness and precision, it is also possible to built the chair with a single rack leaving the other shaft 15 or 16 free.

The chair 1 now being proposed optionally also has a footrest 20 which is fitted with the relevant height-adjustment means in order to be adaptable to any user.

15 Given that people's height is not always the same, it is also recommendable and intended in this invention to provide the armrests with height adjustment.

Another optional characteristic is to give the armchair 1 a support tray or work surface set between the armrests, for example tilting to one side, on which work or leisure items can be placed, such as computer accessories (keyboard, mouse, laptop computer or a book or games). To prevent any such articles from falling off, it is intended for this tray to be fitted with the securing or housing means with a rim for preventing the articles from falling. The examples given are obviously not limiting.

25 According to one form of embodiment, the seat is tilted by moving a lever set on one of its sides, so that the pinions are moved in respect of the racks by means of the proper reduction.

In a more sophisticated embodiment, the movement can be driven by means of an electric motor.

30 It has been envisaged for the relative displacement between the racks to be done only by one of the shafts 15 or 16. In this case the second shaft will remain at the proper distance in respect of the first by means of at least one separating rod or shaft.

This is for industrial application in the manufacture of seating.